DOCUMENT RESUME

ED 105 982 PS 007 823

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TITLE	Studies of Cooperative Behavior. Final Report.
INSTITUTION	North Carolina Univ., Chapel Hill. Frank Porter Graham Center.
SPONS AGENCY	North Carolina State Dept. of Public Instruction, Raleigh. Div. of Research.
PUB DATE	1 Jul 74
NOTE	27p.; This study is part of the larger report, "Developmental Research on the Improvement of Kindergartens in North Carolina"; For other studies, see PS 007 821-824
EDRS PRICE	MF-$0.76 HC-$1.95 PLUS POSTAGE
DESCRIPTORS	*Behavior Rating Scales; Check Lists; *Childhood Friendship; Classroom Observation Techniques; *Helping Relationship; *Interaction Process Analysis; Intergroup Relations; Interpersonal Relationship; Kindergarten Children; Personality Assessment; *Primary Education; Sex Differences; Social Relations
IDENTIFIERS	*Cooperative Behavior; Cooperative Behavior Checklist

ABSTRACT

This study was one of four designed to develop the methodological, measurement, and research strategies necessary to begin to define, analyze, and understand cooperative behavior among 4- to 6-year-old children in educational settings. Subjects were 30 4-, 5- and 6-year-olds in a kindergarten program. Each of the 30 children was observed for a 20-minute period during "center time", i.e., the period during which each child joins in the activities of one or more of the 10 learning centers. A Cooperative Behavior Checklist (CBC) was developed to provide information concerning: (1) an account of the antecedent conditions in which cooperative behavior is taking place, provided by either teacher or child; (2) the flow of cooperative behavior, either verbal or nonverbal; and (3) the behavioral outcomes. Results of the study suggest that it is possible to develop observational techniques that can reliably record the antecedent conditions, flow, and outcome behaviors which make up the sequence of behaviors described as cooperation. The appendix contains a complete description of the CBC instructions, the code sheet, and a detailed presentation of the results. (CS)

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ED105982

Final Report

Studies of Cooperative Behavior

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PS 007823

Submitted to:

North Carolina State Department of Public Instruction

Division of Research

July 1, 1974

Preface

This research was carried out under a contract to the Frank Porter Graham Child Development Center from the North Carolina State Board of Education. The opinions stated are those of the authors and do not represent the positions or policies of the granting agency.

During the spring of 1974, the research staff of the FPG Center conducted a series of four studies which related to the quality and improvement of kindergarten programs in North Carolina. The study described herein was the second in this series.

All subjects in the studies were students (or their parents) in the multi-age, open classroom housed in the research building at the Frank Porter Graham Child Development Center in Chapel Hill, North Carolina. The class was composed of 60 children, of whom there were 10 four-year-olds, 29 five-year-olds, and 21 six-year-olds. The four-year-old children participate in a kindergarten program supported by the Center; however, the other children are public school students. Ninety-three percent of the parents agreed for their children to be involved in the studies.

The authors appreciate the assistance and cooperation provided by the Chapel Hill-Carrboro Public Schools and the Division of Research in the North Carolina State Department of Public Instruction.

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Studies of Cooperative Behavior

Meredith C. McKinney, Robert B. Pittman and Donald J. Stedman

Without a doubt one of the most important commodities in the world today is cooperation. Everyone wants it, some give it, others avoid it, many give it only grudgingly. Why? How does it start: Does it lead to interpersonal and academic achievement?--or does it flow from it?

It is within that general context that special studies of cooperative behavior were initiated and conducted. The basic question was "What is this phenomenon in early childhood?"

Specifically, cooperative behaviors are of paramount interest to North Carolina educators, not only from the teacher-child management aspect but, more importantly, from the child-child learning aspect.

If early childhood education programming continues to depend heavily on the open education concept, inter-child communication and cooperation is and will continue to be a major factor in the success or failure of this educational approach. Providing an open curriculum and fostering interaction between the learners will on one hand rely on the development or presence of cooperative skills and on the other hand provide a setting within which those skills can develop.

Cooperative behaviors encourage and foster both verbal and non-verbal communication and social skill development. Some have said that the development of adequate cooperative skills is the necessary antecedent condition to effective cognitive development and academic skill. Certainly it is necessary to engage in cooperative activities in order to negotiate

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sucessfully any kindergarten or first grade.

It is therefore important to examine and characterize cooperation, cooperative behaviors and those settings within which it develops or within which it can be expected to occur if stimulated. This would be an important knowledge and tool for teachers who could then be in a more advantageous position to stimulate and foster cooperative behaviors and consequent improved communication, social and academic skills.

The purpose of the pilot studies completed in conjunction with this current research was not to accomplish a complete analysis and articulation of this complicated developmental characteristic of human behavior. However, an attempt was made to develop the methodological, measurement and research strategies necessary to begin to define, analyze and understand this important behavior as it occurs among four- to six-year-old children in educational settings.

The data acquired through the observational strategy which was developed address themselves to an examination of the quantity of cooperative behavior to be expected in these educational settings, the possible difference in the rate and type of cooperative behaviors as a function of sex role, differences in the occurrence of cooperative behaviors as a function of settings, the duration of these behaviors, their possible sequencing and those circumstances under which it can be expected not to occur.

In addition, an effort was made to gain some experience in the observing and recording of cooperative behaviors in educational settings. These observations themselves need to achieve a level of reliability that will provide us with an instrument to examine the characteristic.

With these things in mind we developed and conducted the following study with the consequent results as indicated.

Method

Scale Development

Since a systematic analysis of various categories of cooperative behavior was not available, the Cooperative Behavior Checklist (CBC) was constructed on an *a priori* basis to be as inclusive as possible. The only behaviors which were excluded were purely social interaction, compliance with specific instructions, and parallel play. For a complete description of the CBC instructions and the code sheet, see the Appendix.

The CBC was designed as an event-sampling rather than a time-sampling scale since cooperative behavior can be recorded only when it is observed. The check list was classified into the following three divisions: 1) antecedent conditions, provided by either teacher or child; 2) flow of cooperative behavior, either verbal or nonverbal; and 3) the behavioral outcomes.

Subjects and Procedure

The subjects were 30 four-, five-, and six-year-olds who participated in the kindergarten program at the Frank Porter Graham Child Development Center. A complete description of subject characteristics can be found in Study 1 of this series.

Each of the 30 children was observed for a 20-minute interval during "center time," *i.e.*, the period during which each child joins in the activities of one or more of the 10 learning centers. Multiple coding was used so as to record the sequencing of events as fully as possible. For example, under antecedent conditions, the child might first

move into an area of ongoing activity and then request that he become involved with it. For purposes of analysis, however, one category was coded under each of the three divisions. In the few cases where there was some question regarding predominant behavior, the code selected was that which was considered more advanced developmentally, e.g., verbal over nonverbal.

Results

Interrater Reliability

A second observer was available to calculate interrater reliability for 15 children, and for each of these subjects, total duration of cooperative behavior was computed. The product-moment correlation for duration between the two raters was .86 which was significant ($P < .01$). The results also showed that there was no significant difference in the mean ratings of duration between the two observers ($t = 0.512$, $df = 14$, $P > .50$).

In addition, percentages of agreements (number of agreements divided by total number of codings) were calculated with the multiple ratings. They were as follows: overall, 67 percent; antecedent conditions, 61.9 percent; flow of cooperative behavior, 68.9 percent; and outcomes, 69.2 percent.

Results of Cooperative Behavior

Duration

For the entire sample the mean duration of cooperative behavior was 8.33 minutes ($s = 7.09$) with a range from 0 to 19 minutes. In the Appendix these results are presented by age group and sex. There was no significant differences at the .05 level in duration between boys and girls nor among

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the age groups. Figure 1 shows duration of cooperative behavior by number of subjects. As can be noted, duration was not normally distributed but displayed a U-shaped tendency.

Duration of cooperative behavior was correlated with all of the major variables in the core study and with the size of the cooperative group. Of 21 correlation coefficients, only 2 were significant at the .05 level. The correlation between duration and mean bits of information extracted from the matrix solution task was -.44; and with PIAT Mathematics raw score, -.38. There was also a tendency for duration of cooperative behavior to increase as group size increased ($r = .33$). It should be noted that one would expect at least one significant correlation coefficient by chance.

Number of Instances

In Tables 2 and 3, the number of instances of cooperative behavior is presented, including children who engaged in more than one cooperative sequence. Because of low expected frequencies, χ^2 analyses could not be carried out on these data nor on any of the succeeding results. Table 4 shows the number of children who were observed in cooperative activities.

Of the 30 children observed, 23 displayed cooperative behavior. Six of these children engaged in two separate cooperative activities. There appeared to be no sex or age differences in the number of cooperative instances. It should be noted, however, that cooperative behaviors were not observed in four of the six-year-old girls.

Group Characteristics

The mean number of children, including the subject, in the cooperative groups is shown in Table 5. It should be noted that these data were

derived from the first instance in which the number of children engaged in cooperative behavior. Based on the nubmer of subjects who did cooperate, there appear to be little sex or age effects.

Of particular interest was the finding that of the 23 cooperative behaviors classified by sex of group composition, 16 of these were predominantly same-sex interaction. This interactive pattern was similar for both boys and girls.

Teacher Presence

On only 7 of the total 29 instances observed, i.e., 24 percent, was the teacher present with the group, although it was possible that she was stationed in the center.

In addition, in five of these instances, the interaction pattern was predominantly teacher-child; in six, the cooperative behavior was initiated by the teacher rather than a child.

Lastly, in six instances the flow of cooperative behavior was verbal or nonverbal task-oriented, problem-solving behavior. However, when the teacher was not involved with the group, the frequency of such behavior was eight, or about the same.

Distribution by Learning Centers

Among the children observed, cooperative behavior occurred in all of the 10 centers except art. Because of the wide distribution and low frequencies across the centers, tables are not included.

There was some tendency for a greater number of instances to occur in the reading and science centers. No apparent sex or age differences were noted. Duration of cooperative behavior seemed to be longer in the science, listening, blocks and math centers, although the small number of

subjects precluded any statistical analyses.

Categories of Cooperative Behavior

1. Antecedent Conditions. The most frequently occurring antecedent conditions were as follows: child suggests interactive activity, child moves into activity, and teacher provides activity which may be shared. It should be noted that the first two categories on the CBC may require considerable inference on the part of the rater.

2. Flow. Of the 23 children, 6 engaged in verbal, task-oriented behavior; 6, in nonverbal, task-oriented behavior; and 7, in role playing. There were no apparent differences in frequency between verbal and nonverbal cooperative activities. Neither were sex to age differences noticeable. When flow of cooperative was classified as problem-solving versus all others, no age effects were observed. However, the following table is suggestive of the fact that there may be differences in the categories of cooperative behavior in which young boys and girls engage.

Table 6

Number of Children Engaged in Problem-Solving Behavior Versus All Other Types

	Problem-Solving Behavior	All Others
Boys	8	4
Girls	4	7

In this case a χ^2 analysis of goodness of fit was carried out; however, it was not significant at the .05 level. It should be noted that of the

16 girls, 5 engaged in role playing; of the 14 boys, only 2, in role playing. For the compendium of cooperative behaviors, see the Appendix.

3. Outcomes. Of the 23 children who were observed as cooperating, the outcome of 18 was classified simply as completion of task, game or role playing. Two were categorized as attention diverted by teacher; two, by another child. The only other outcome observed was that of intrusion.

Discussion

The results of the study support several general hypotheses held prior to the completion of the pilot work.

First, it is apparent that it is possible to develop observational techniques that can reliably record antecedent, flow, and outcome behaviors which make up the sequence of behaviors described as cooperation. Of course, more work needs to be done to refine the scale developed to quantify these behaviors. In addition, work should be carried out to develop a more economical training program for observers to be engaged in this type of research activity. The behavior lends itself to description and to observation and, in this regard, supports the notion of further research in this area.

It would appear that the amount of time spent in cooperative activity (duration) is partly a function of the task and partly a function of the setting within which the task is available or introduced. In any event, duration is a very salient feature of cooperative behavior, both from the standpoint of opportunities for observing it in action and for its effectiveness to be felt by the participants. The results of this study suggest that we should look very closely at the relationship between

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cooperative behaviors and the settings within which they naturally occur or within which they can easily be induced. This may lead to a more judicious construction or use of open space, and materials or curriculum components in order to foster cooperation and improved communication and social skills while increasing specific academic skills.

It is of interest that there may be sex differences in the amount and type of cooperative behaviors evident in this age grouping. Continued work in this area should evaluate the methodology and data for sex differences in order to take a look at the possibility of differential approach to observing, designing or making use of cooperative behaviors as a function of sex or sex role of the child.

The presence of the teacher in the group may or may not foster cooperative behaviors. This factor should be explored further in an effort to clarify not only areas in which teacher-child cooperative behaviors might occur but areas in which child-child cooperation might be enhanced or dampened by the presence or absence of the teacher or other adult figure. This raises the question of the relationship between such social behaviors as cooperation and those curriculum materials and cognitive components of the educational setting upon which we mostly focus.

There are obviously a number of categories of cooperative behaviors and a number of types of behaviors that might be called cooperation. The limited educational settings within which children were observed for this study define more narrowly than we would have liked, the breadth of opportunity for cooperative behaviors and a broader listing of categories of behaviors that might properly fall under the rubric of cooperative behaviors.

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Finally, this study did not provide a sufficient opportunity to relate language, social behaviors and achievement through systematic observation of cooperative behaviors. Additional work, both methodologically and in terms of further laboratory and field pilot studies, should be helpful along this line.

Any pilot study has its limits. This one appeared to be primarily constrained by the lack of access to a larger number of groups of children of varying ages working in more diverse formal and informal settings. The richness of the data that might be forthcoming from such opportunities for access to children would greatly enhance our ability to define and elaborate cooperative behaviors.

Recommendations

First, more work must be done in the area of improved methodology for observing and analysing cooperative behaviors. Inter-judge reliability and setting-by-setting observational schedules need to be developed in order to improve our capacity to understand cooperative behaviors and their role in the development and educational achievement of young children. Certainly some basic measurement research still needs to be done in order to improve the quantitative approach to this phenomenon, especially in the area of attempting to correlate this behavior with other developmental factors and other behaviors.

It is recommended that specific studies be done to look into the adult-child cooperative behavior and the sex differences in cooperative behaviors suggested in the pilot study.

It is strongly suggested that studies be developed and conducted within the laboratory setting to get at the relationship between cooperative

behaviors and problem solving abilities in and between children before more work is done in the field.

There are strong implications for the potency of the capacity of a child to engage in cooperative behaviors in order to make full use of the educational setting, especially the open education approach. Since this is such a salient skill, it is felt to be of the utmost importance for any array of special studies to be undertaken in connection with the improvement of the early childhood education program in North Carolina.

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Appendix

Detailed Presentation of Results of Study 2

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Instructions for the Cooperative Behavior Checklist

This event-sampling instrument was designed to provide information concerning the conditions under which cooperative behaviors occur, and the sequencing and outcomes of these behaviors. Initially, the observer must give a detailed account of the general environment in which the cooperative behavior is taking place. This description is coded in items 1 through 8 at the top of the page.

Item 1--Setting: A brief description of the setting in which the cooperative behavior occurs should be entered. An example of such a description would be reading center, playground, dramatic play area, or family group. Note that these examples pertain to an open classroom setting.

Item 2--Initial Time: This entry should specify the time when the cooperative behavior was first witnessed. It should be noted that this period does not necessarily coincide with the initial time of observation.

Item 3--Concluding Time: This should be the last entry which the observer makes. It should designate the time at which the child ceased his participation in the cooperative behavior or the time at which the observer ceased observing the individual.

Item 4--Teacher Present: The only entry which is necessary for the observer to make is a check mark in the appropriate space to indicate the presence or absence of the teacher. Teacher presence should be coded "yes" even though he or she may not be an active participant in the ongoing activities.

Item 5--Number of Children in the Group: This item requires that the observer make two entries. First he should enter the total number of children who comprise the cooperating group. This may be as small as two individuals. The second entry concerns the nature of the sex of those in the cooperating group. If the children in the cooperating group are predominantly of the same sex as the individual who is being observed, then that statement should be checked. Correspondingly, if the majority of the other members of the cooperating group are of the opposite sex, then "predominantly opposite sex" should be indicated.

Item 6--Interaction: The only entry which is required for this item is a check mark in the appropriate space. This designates whether or not the cooperative behavior which is being observed primarily involves the teacher and the child or the child and his peers.

Item 7-- If the cooperative behavior was initiated by the child being observed then a check should be made in the space provided for this item.

Item 8-- If the cooperative behavior was not initiated by the individual being observed, then the initiator of the cooperative behavior should be coded in the appropriate space.

As can be noted, the coding sheet has two major divisions. The first eight items, which have just been described, provide information as to the setting under which the cooperative behavior is taking place. The remainder of the coding sheet is concerned with identifying the antecedents of cooperative behavior, the form which this cooperative behavior takes, and the final outcome of the cooperative behavior. It is with respect to these three major concerns that the remainder of the coding form is divided. Prior to a discussion of these major categories, an explanation of the actual coding process will be undertaken.

The first part of the coding process concerns the appropriate designation of "other" or "target" by those items which require such a distinction. If the descriptive statement, e.g., "child moves into activity," is applicable to the individual being observed, then "target" should be designated by a check mark. The category "other" should be checked when the behavior described in the statement is conducted primarily by another child or other children. A hypothetical situation may help clarify this distinction.

Child 1, who is the individual under observation, is playing with building blocks. Child 2 comes over to Child 1 and asks to join him in playing with the blocks. Child 1 consents and the two children begin to build a house with the blocks. Item 5 under the heading of "antecedent conditions", "child asks or is asked to join activity", is the best descriptive statement. As this action leads to the cooperative behavior of playing together by the individual being observed, it is necessary to code this action. Furthermore, since the target child did not initiate the behavior, the appropriate space under the column heading "other" should be checked. Only those items which have underlined spaces designated beside them require the distinction between "other" and "target". Other items are self-explanatory and thus, do not require such a differentiation.

The blocks provided to the right of the descriptive statements allow the observer to code which behaviors were observed and the sequence of their occurence. Coding is accomplished by entering a number in the block immediately adjacent to the descriptive statement which is applicable to the cooperative behavior being observed. Statements are coded in numerical sequence so as to provide a description by time of the cooperative behavior being observed, i.e., the first statement coded should be done so with a 1, the second with a 2, etc. There are three columns provided for each descriptive statement. One column is provided for the initial coding. However, if that behavior recurs, it can be coded in columns 2 or 3.

On the extreme right hand side of the coding sheet is a column labeled "comments". This space is provided so that the observer may make notations concerning the content of the cooperative behavior which is being observed. Any additional observations which one makes concerning the cooperative behavior aids in later reconstruction of the course of events. However, because of lack of space, this column was deleted from the report.

Antecedent Conditions

Under the heading of Antecedent Conditions, the observer will find statements which are descriptive of conditions which could lead to cooperative behavior.

1) Child has problem-can't solve.
This category refers to any situation in which the child has a task and is unable or produce a solution or to complete it. An example of this could be a puzzle which the child cannot complete or a story which the child cannot read.

2) Child has need for something.
This refers to any situation in which the child needs some physical object which he does not possess. Examples include a hammer, a pencil, paint, or a book.

3) Child suggests task-oriented activity.
The "target" or "other" child suggests an activity such as reading a book or solving a math problem. These activities should not be play activities, as they are coded in the next section.

4) Child suggests interactive activity (play).
This item is closely related to the preceding item except in this case the activity suggested is a game or some other play activity.

5) Child asks or is asked to join activity.
In this case, the child requests or is asked to join in an ongoing activity. For example, the target child may ask to participate in a Bingo game which is already in progress.

6) Child moves into activity.
This situation is analogous to that described in statement 5, except in this case the child simply moves into the activity without verbal exchange.

The remaining items under "antecedent conditions" are different from those previously described. The previous items denote situations in which the cooperative behavior is initiated by a child; the last ones, of situations initiated by the teacher.

1) Teacher provides activity which may be shared by two or more persons. This statement is descriptive of a situation in which the teacher provides an activity which results in cooperative behavior on the part of the children. In this instance, the teacher does not actively solicit cooperation among the children but rather provides some activity which requires cooperative behavior. An example of such an activity could be a game, or book which can be shared.

2) Teacher requests child to help another.
In this situation the teacher is asking <u>one</u> child to lend assistance to another child in helping to solve a problem or perform a task. One example refers to the teacher's requesting one child to help another with his reading or with constructing something.

3) Teacher requests children to cooperate on a particular task.
This case can be distinguished from the preceding one in that the teacher addresses himself to two more children concerning

cooperation on a particular task. When the teacher requests that the child help another, statement 2 should be coded. However, if he suggests that two or more children simply work together on a task, category 3 should be checked.

4) Teacher requests child to share something with someone else. This request by the teacher includes such things as toys, books, pencils, or paper.

Flow of Cooperative Behavior

Under this heading, statements are found which describe what form the observed cooperative behavior takes. It should be noted that the actual content is simply recorded. These statements are divided into verbal and nonverbal sections so as to distinguish between those behaviors which do or do not require verbal skills.

Verbal

1) Mutual task-oriented, problem-solving behavior.
If the focus of the cooperative behavior is upon finding a solution to a probelm or completing a certain task, then this statement should be coded. Examples of this include such behaviors as two children working together to solve an arithmetic problem or to understand a set of instructions for the assembling of a model airplane.

2) Helping (Aid requested).
In this case one child helps another in task-oriented, problem-solving behavior.

3) Role playing (mutual).
For the most part, instances of this will be observed in a "play" situation. One example includes that of playing house in which one child selects the role of mother; and another, the role of father.

4) Game playing (structured).
This category refers to a game which has a structured format with certain rules governing play. Such games as bingo, monopoly, or checkers would be coded under this category. It should be noted that while verbal interaction may be at a minimum level, these activities require verbal, problem-solving skills.

Nonverbal

1) Mutual task-oriented, problem-solving behavior.
This statement is analogous to statement 1 in the verbal category except that the cooperative behavior in this instance is predominantly nonverbal. Examples include two children trying to hang a picture, to build a boat, or to turn on a phonograph.

2) Helping behavior (nonverbal demonstration).
Situations referred to by this statement involve one child actively demonstrating how to accomplish a certain nonverbal task for another child, e.g., how to attach a sail to a boat.

3) Game Playing.
Cooperative behavior which is best described by this statement is game playing which is predominantly nonverbal, such as building a road with blocks. It is not necessary that the game being played has a formal structure governed by a set of rules.

4) Lending or sharing.
The lending or sharing is essentially nonverbal and can be self-initiated or teacher-initiated.

5) Gross motor behavior.
This category refers to gross motor activities in which two or more children cooperate. One example involves mutual pushing of the merry-go-round.

It should be noted that compliance, parallel play, and purely social interaction, e.g., talking about the previous night's activities, have not been defined as cooperative behavior.

Outcomes of Cooperative Behavior

The concluding section of the coding sheet concerns the outcomes of cooperative behavior.

1) Child gains new information to solve problem.
The problem with which the child was faced is solved through a cooperative effort. The underlying assumption is that through cooperative behavior, the child gains new information, develops skills, or solves the problem. Examples of this situation might occur when children work together to accomplish a reading task, or to solve math problems or a puzzle.

2) Breakdown of behavior which results in
a) physical aggression,
b) verbal aggression,
c) withdrawal
In this category it would be possible for all three behaviors to be coded. Such an instance could occur when one child is verbally abusive toward another child, who in turn retaliates physically. This might lead to the withdrawal of the first child from the activity. The observer would first code verbal aggression, then physical aggression, and finally withdrawal.

3) Intrusion which leads to the cessation of the cooperative behavior.
The criteria for this category is that another individual enters the area of ongoing activity and consequently interrupts (verbally or nonverbally) the cooperative behavior.

4) Attention of the children diverted by teacher or child.
In this situation, the attention of the child is diverted by behavior occurring outside the cooperative group, but which is not directed toward the target child.

5) Completion of task, game, or role playing.
This miscellaneous category refers to those situations in which the cooperative behavior ends because the activity has reached its normal conclusion, or because the situation in which the observation period for a particular child has ended.

Name:_____ Date:_____ Sex:____ Age Group_____

1) Setting:
2) Initial time:
3) Concluding time:
4) Teacher Present: Yes____ No____
5) No. of Children in Group_____
Predominantly Same Sex:_____
Predominantly Opposite Sex:____
6) Interaction: Teacher-child_____
Child-Child_____
7) Cooperative Behavior was initiated by child_____
8) Cooperative Behavior was elicited from child by_____teacher
_____peer of same sex
_____peer of opposite sex

Antecedent Conditions

Other	Target		
____	____	1. Child has problem can't solve	
____	____	2. Child has need for something	
____	____	3. Child suggests task oriented activity	
____	____	4. Child suggests interactive activity (play)	
____	____	5. Child asks or is asked to join activity	
____	____	6. Child moves into activity	
____	____	7.	
____	____	1. Teacher provides activity which may be shared by two or more persons	
____	____	2. Teacher requests child to help another	
____	____	3. Teacher requests children to cooperate on a particular task	
____	____	4. Teacher requests child to share something with someone else	

Flow of Cooperative Behavior

Other	Target		
		(Verbal)	
		1. Mutual task-oriented, problem solving behavior	
____	____	2. Helping (Aid requested)	
		3. Role playing (mutual)	
		4. Game playing (structured)	
		(Nonverbal)	
		1. Mutual Task oriented problem solving behavior	
____	____	2. Helping behavior (nonverbal demonstration)	
		3. Game playing	
____	____	4. Lending or sharing	
____	____	5. Gross motor behavior	

Outcomes of Cooperative Behavior

Other	Target		
____	____	1. Child gains new information to solve problem	
		2. Breakdown of behavior which results in	
____	____	a) physical aggression	
____	____	b) verbal aggression	
____	____	c) withdrawal	
		3. Intrusion from outside which causes the cooperative behavior to cease	
		4. Attention of the children diverted by	
		a) teacher	
____	____	b) child	
____	____	5. Completion of task, game or role playing	

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Table 1

Means and Standard Deviations of
Duration of Cooperative Behavior

Age Groups		Sex	
		Boys	Girls
4	$\bar{x}$	10.50	10.00
	s	6.65	5.89
5	$\bar{x}$	5.00	13.80
	s	6.29	5.27
6	$\bar{x}$	10.60	0.60
	s	5.89	1.20

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Table 2

Total Number of Cooperative Instances
by Age Group

Age Groups	Number of Instances		
	0	1	2
4	1	7	2
5	2	7	1
6	4	3	3

Table 3

Total Number of Cooperative Instances
by Sex

Sex	Number of Instances		
	0	1	2
Boys	2	9	3
Girls	5	8	3

Table 4

Number of Children for whom
Cooperative Behavior was Observed

Age Group	Sex	
	Boys	Girls
4	4	5
5	3	5
6	5	1

Table 5

Mean Total Number of Children
in Group Where Cooperative Behavior Occurred

Age Group	Sex	
	Boys	Girls
4	2.25 (n=4)	3.60 (n=5)
5	2.67 (n=3)	4.20 (n=5)
6	2.20 (n=5)	2.00 (n=1)

Table 7

Compendium of Total Number of Observed
Cooperative Behaviors

Frequency	Verbal
4	Reading together
1	Looking up the meanings of words
1	Playing bingo
4	Role playing: Playing "family"
1	Sharing telephone conversation
1	Driving a car together
1	Pretending to construct a barn
1	Playing submarine searching for a snake
T = 14	

Frequency	Nonverbal
1	Creating together: constructing a clock
1	building a fort
1	ma ing cookies
3	working puzzle
1	Putting away toys together: blocks
1	books
1	Sharing: use of weight balance
1	use of blocks
3	adjusting earphones and listening to-
1	Pushing child on swing gether
T = 14	

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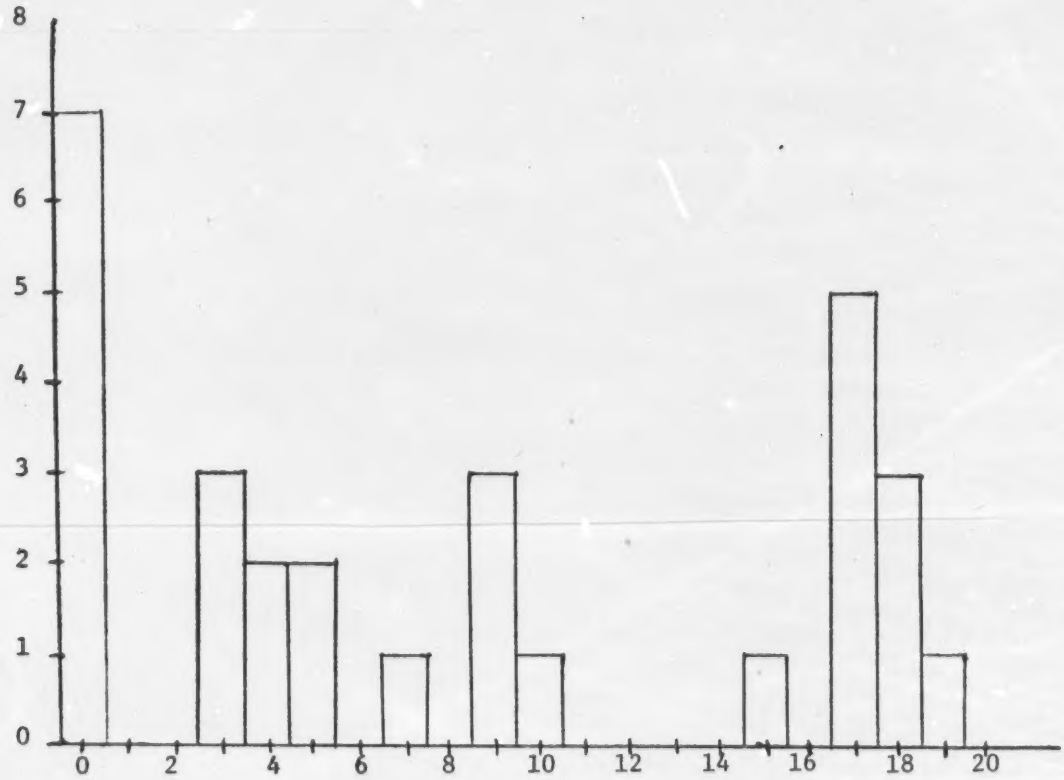

Figure 1

Duration of Cooperative Behavior